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ABSTRACT

The purpose of this research study was to compare two kinds of perceptual training for kindergarteners. A control group was grouped for instruction in visual or auditory perception. The children whose weaker modality was auditory received an "Open Court" program which stressed the acquisition of phonetic skills. The Frostig-Horne program was given to those with visual perception difficulties. No attempt was made to determine the specific nature or level of their perceptual inadequacies, all children beginning their particular programs simultaneously. The children were taught by both teachers and aids. A carefully equated experimental group in terms of IQ, auditory perception, and reading was instructed by means of individual programs which emphasized instruction in both the weak and strong modality at students' specific level of ability. Those with no deficiencies participated in experience writing. The experimental group was taught by teachers and volunteers. Instructional time for both groups averaged thirty minutes a day, three times each week, over an eight month period. An analysis revealed that the experimental group made significantly greater improvement than the control group in the evaluation of visual perception, auditory perception, and in letter-word recognition. (MKM)

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A LEARNING PRINT APPROACH TOWARD PERCEPTUAL TRAINING AND READING IN KINDERGARTEN

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Training in visual and auditory percpetion has received considerable attention in recent years. Interest has not been confined to educators. Through popularization in magazines and newspapers, parents have also taken a lively interest in the phenomena of perception. At this point in time teachers and parents have been assaulted by the merits of a wide variety of "perceptual systems." Many schools have become battle grounds over contending programs. More often than not many such perceptual systems have been uncritically accepted by teachers as well as parents. At present there is little unanimity over what constitutes an adequate developmental program in visual and auditory perception or, in fact, if such programs have any merit whatsoever.

A Discussion of the Research

Many investigators professed the need for training in visual and auditory perception. Inadequate development of these sensory modalities, they argued, appeared to hamper the later development of reading skills (Kephart, 1971; Cruickshank and others, 1961; Frostig and Horne, 1961; Getman and others, 1968). These authors believed that normal preschool instruction, such as story telling, trips, group transactions, etc., was insufficient to insure the growth of visual and auditory perception, behaviors basic to later reading achievement. Sabatino and Hayden (1970) reasoned that if these behaviors were deliberately developed the changes in behavior would become permanent and have a beneficial effect on

later reading development. Perceptual training systems, such as the Frostig-Horne program to develop visual perception, were adopted by many school systems as part of the kindergarten and first grade curriculum for every child. Having all learners involved in such a program has sometimes been called the "shotgun" approach (Falik, 1969). Unfortunately, this approach appeared to neglect the fact that perceptual inadequacies exhibit considerable variation, both to type and extent. One child, for example, may have received the Frostig-Horne visual-motor development program when, in fact, he may have been seriously deficient in auditory abilities. Another child with auditory deficits received, along with the rest of his class, a program designed to enhance auditory perception skills. This training may well have proved of little value to this young learner since no attempt was made to determine the extent or level of his auditory inadequacies. His disability could have encompassed the entire spectrum of auditory deficits: perception, association, expression, closure, sound blending, sequential memory, etc. Or, on the other hand, his auditory difficulties may have been comparatively negligible. Bateman (1964) argued persuasively that what was essential to any modality training was the prior determination of a specific child's level of neurological integration. At the "lower level" this included activities involving the perceptive or manipulative aspects of symbol with little regard for meaning as in the Frostig-Horne program. Near the top of the integration spectrum were activities involving a high degree of obtaining or conveying the meaning of language symbols such as

a basal reader approach at the pre-primer level. Training techniques such as the Getman, the Kephart (1971), and the Frostig-Horne programs, would be most effective with children who possessed a comparatively low level of neurological integration. This would not appear to be the case, however, with most of the children at the kindergarten or first grade levels. It can be argued that many children in kindergarten do not need the Frostig program of visual-motor training since their neurological integration level has developed beyond this particular milestone and, in fact, they may be "ready" for introductory reading tasks.

Indeed, evidence for the wholesale use of the Frostig-Horne and similar programs has not been unanimous. Sherk (1968), Wiederholt and Hammill (1971), and Buckland and Balow (1973), concluded that improvement in reading cannot be expected as a result of systematic use of the Frostig-Horne program. Goodman and Hammill (1973) turned up much the same conclusions from a review of forty-two intervention studies in which either the Getman or Kephart training procedures were utilized. The wholesale use of these programs as a readiness format for all young learners without regard to the specificity of learner inadequacies as to type or extent, would appear to be less than justified. This criticism does not question the effectiveness of any particular training technique on a specific population demonstratedly in need of such intervention. In studies that matched a particular training program with a homogeneous

group of children in need of such training, the results have apparently been quite successful (Cruickshank and others, 1961; Getman, 1968, Kephart, 1971). To conclude this discussion of research findings some mention should be made of the paucity of methodologically sound studies in this general area. Hammill and others (1974) concluded that of the forty-two investigations that they reviewed, only sixteen were classified as being "better" research reports. They stated that "better" research studies should have met the following criteria: (1) had at least twenty experimental subjects, (2) provided at least twenty weeks or sixty sessions of training, and (3) utilized an experimental and control design.

New Design Features

The present study sought to provide a learning model that avoided many of the pitfalls discussed in the above section. The basic assumption underlying this learning scheme included the belief that many of the previous attempts at modifying perceptual behavior were either too amorphous in experimental design, tending to neglect the specificity of learner needs, or were partially invalidated because they suffered from serious methodological inadequacies. The most serious of these deficiencies, which the present study sought to avoid, included the following: (1) having control groups which were not equated subject to subject, which could allow the groups to vary widely on parameters other than the one on which matching was effected; (2) providing perceptual training to the experimental group but not allowing for the same

attentional and motivational factors in the control situation; (3) measuring the effects of experimental programs only at the perceptual level (process functions) rather than providing for instruction at both the perceptual and the reading (task functions) levels, depending upon each child's level of neurological integration; (4) measuring the effects of remediating a child's deficient modality rather than the effects of remediating the weaker modality (i.e. visual) and enhancing the development of the stronger modality (i.e. auditory), simultaneously.

The Present Study

The specific objective of this study was to determine whether any significant improvement occurred in visual perception, auditory perception, and reading skills of kindergarten children when they were subject to a specific type of educational treatment when compared to a control group. (The control group's instructional program was quite similar to those typically found in the literature which were designed to remediate presumed perceptual inadequacies among kindergarten children.)

To this end twenty-three kindergarten age subjects were selected from a population of forty-two children who attended the Early Childhood Center of Drexel University. Approximately half of the children selected were blacks involved in a Get Set Day Care program while the remaining children were tuition-paying white children whose parents were professionals. The twenty-three subjects represented those children for whom a matching child was available. This experimental group (Group I) was organized by matching

each of its members with an equivalent member of the control group (Group II) on the following factors: chronological age (within three months), Wechsler intelligence quotient (within eight points), Frostig visual perceptual quotient (within five points), Illinois Test of Psycholinguistic Abilities "auditory perceptual age" (within three months), Wide Range letter and word recognition (within three months), race, and socio-economic status. The groups were nearly identical in I.Q. (109) auditory perception (6-0), visual perception (6-3) and reading (Kg.6). The children represented a broad spectrum of learner behaviors, from those with severe perceptual deficits in both modalities to those will all learning systems intact, ready to be initiated into reading tasks.

A "Learning Print" Approach

Before instruction was initiated with Group I, a diagnostic profile or "learning print," based on the above testing, was developed for each child. A child was considered to have a modality deficiency if his scores fell one or more years below his mental age as established by the Wechsler Preprimary Scale. The specific deficiency or cluster of deficiencies which should receive initial emphasis was then determined. Certain children with a severe visual deficit, for example, would begin with exercises to develop general form and configuration skills while more perceptually integrated kindergartners were introduced to letter orientation. The same format was followed for the auditory modality: a few children

began with exercises to develop such comparatively simple skills as reauditorizing words or imitation sound and rhythm patterns while others worked on more difficult tasks such as blending syllables into words. One half of instructional time was spent on remediating these modality deficiencies. The remaining time was spent in teaching to the child's intact or preferred modality since remediating a child's deficits alone could insure that reading would need to be postponed until these deficits were remediated. For some children, this could mean waiting until second or even third grade. A child with visual deficits at the perceptual level, for example, had difficulty retaining visual images for every word; he needed to acquire a systematic means of identifying new words. Assuming that his auditory perception skills were well retained, he was taught to identify words using phonetic and syllabification skills. In the case of a child who exhibited equal difficulty in both modalities, instructional time was evenly divided. In the case of a lerner whose perceptual skills were well developed and was ready for task oriented (reading) activities, instructional time was devoted to experience writing as a means to word acquisition. Experience writing helped to insure experience background and heightened pupil interest. Each child's story, whem completed, was included in a weekly "newspaper" which also included drawings and photographs of children at the perceptual level. It can be seen that by these techniques each child received instruction at a different juncture along the perceptual-reading developmental spectrum.

A summary description of the instructional procedures followed with one child may help clarify the learning procedures discussed above:

Ted's "learning print" indicated a pronounced auditory deficiency. Although five years of age, with a mental age of 6-6, his ITPA auditory scores averaged at the three year old level. His most decided weaknesses were auditory closure and sound blending. Fortunately, his Frostig performance was somewhat above age expectation. A college freshman had developed good rapport with Ted and had tape-recorded a number of stories the child had related. At least two times each week his "teacher" provided twenty-minute small group or individual remedial instruction designed to strengthen the auditory modality. Auditory closure lessons, for example, were developed. A tape recorder was particularly useful. Ted identified words from his experience stories with syllables omitted such as -acaroni for macaroni, and -an-a --aus for Santa Claus. Similar lessons were developed to remediate his inadequate sound blending skills. Ted also received a weekly session designed to enhance his comparatively well developed visual modality. It was apparent that Ted could learn to recognize words presented as wholes, especially as they occurred in his experience stories. One of his stories was typed and he was asked to indicate a particular word he would like to "learn." He was taught to look at the word until he thought he could recognize it among a group of similarly configurated words.

> Having Ted trace words with two fingers, as he pronounced each syllable, proved effective in helping him retain a new word. Groups of words he had thus learned were presented tachistopically the following session to determine if he had retained the "learned" word. If not, he would go back and "trace" it again. Eventually, groups of learned words were made into sentences for Ted to read.

All instruction was carried out by paraprofessionals, including lower classmen college students, under investigator supervision. They were trained by the investigator through videotapes, personal demonstration, and weekly monitoring while performing their assigned tasks. Inherent in this procedure was the practice of a circular relationship between teaching and evaluation: the investigator utilized the child's responses as feedback to determine the next instructional step. This necessitated the observation of the pupil's responses to a series of situations and noting where the learner succeeded and where he failed. This implied the inadvisability of placing too heavy a premium on initial test results. What was far more important was a point of view and degree of sophistication among the supervisory personnel that stressed the continued probing of the child's learning system.

The Control Group Program

The control group were members of two kindergarten classes. They were grouped for instruction in visual and/or auditory perception. The children

whose weaker modality was auditory received an "Open Court" program which stressed the acquisition of phonetic skills. The Frostig-Horne program was given to those with visual perception difficulties. If neither modality appeared to be deficient, the Open Court program was given but at a much more rapid pace than was the case for the auditorially deficient subjects. No attempt was made to determine the specific nature or level of their perceptual inadequacies, all children being initiated simultaneously into their particular programs. The investigator also trained, through videotapes, course work, and personal demonstration, the two teachers involved with the control groups. Teacher aids, who received training by the kindergarten teachers, were used. By these means the control group received the same attentional and motivational factors as was the case with the treatment group.

Results

Instructional time averaged thirty minutes a day, three times each week, over an eight month period. A statistical test of the difference between changes was needed. Standard error of the difference for paired observations was obtained. The value to t was then calculated for a one tailed test at the .05 level of confidence. This analysis revealed that Group I made significantly greater improvement in the evaluation of visual perception, auditory perception, and in letter-word recognition when compared to the advances made by Group II. The findings would appear to indicate that an instructional program that taught to the preferred

modality while simultaneously remediating the weaker one and that was initiated at each child's specific level of development, either at the process or task level, produced significantly greater increases in perceptual and reading behaviors than resulted from a program that emphasized remediation of modality inadequacies alone.

Discussion

The results of this study, although tentative and in need of further verification with a much larger population, gave rise to a number of important implications, both in terms of methodological considerations and teaching formats. One such implication was that the increasingly numerous findings in the literature which report no statistically significant differences between perceptually trained and non-trained subjects may have been due to the failure of the investigators to take into account the specificity of learner integrities to learning and not just learner deficiencies.

Another implication of this limited pilot study is that children in kindergarten and the early primary years would be more adequately served by highly individualized, competency-based programs. In logistically implementing such a program serious consideration should be given to the use of comparatively inexpensive paraprofessionals who have been intensively trained to teach a narrow range of perceptual skills or reading methods. The present study employed paraprofessionals, trained in one or two teaching techniques within a week's time, to instruct the experimental group.

Through continuous feedback they became quite adept in using, for example, experience stories in teaching the children new words. A teacher possessing a high level of diagnostic and prescriptive sophistication can make very effective use of paraprofessionals in individualizing instruction for a class of twenty to twenty-five children. A teacher equipped with diagnostic-prescriptive expertise and paraprofessional assistance would then be in a position to match a particular child to the most effective instructional format.

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